

REMARKS

The present application has claims 1-14 pending. Claims 7-12 and 14 have been withdrawn from consideration, but not yet canceled. Applicants have herein amended claims 1 and 9.

Support for the amendment of claim 1 may be found in the specification at page 10, lines 26-28 and in Figures 1 and 2. Support for the amendment of claim 9 may be found throughout the present disclosure -- for instance, in Figure 2, in the specification on page 11, line 23 to page 12, line 21, and in example 3, at page 15, lines 3-4 and 8-13.

Pursuant to the previously issued restriction requirement, claims 1-6 and 13 are pending, and claims 7-12 and 14 have been withdrawn from consideration. As mentioned in Applicants last response, Applicants believe the separation of claims 1 and 9 (and their associated dependent claims) is incorrect, especially when the claim amendments made herein are taken into account.

In the August 22, 2008, Office Action, the Examiner maintains that the invention of group I (claims 1-6 and 13) is related to the invention of group III (claims 9, 10 and 14) as subcombination and combination, and that the restriction is appropriate because:

"In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the catalyst coated membrane of

Invention I is not required in order to show novelty of the membrane electrode assembly of Invention III. Specifically, Invention III does not require at least one layer of protective film to be "attached to each of the two surfaces of said catalyst-coated membrane", as is required by Invention I."

Applicants have herein amended claim 9 so that it now depends from independent claim 1 and thus contains all the limitations of claim 1. Claim 1 is directed to a catalyst-coated membrane (CCM) whereas claim 9 is directed to a membrane-electrode assembly (MEA) containing the claimed CCM and at least one gas diffusion layer (GDL). As presently claimed, the combination of claim 9 requires the details of the subcombination of claim 1 for patentability. There is no evidence that the combination (MEA) is patentable without the details of the subcombination (CCM). In such instances, the inventions are not distinct and a requirement for restriction should not be made or maintained, even if the subcombination has separate utility, see MPEP §808.02.

In light of the above amendment of claim 9, the above remarks, and Applicants' previous remarks presented in their last response, Applicants respectfully request that the restriction requirement be reconsidered and that claim 9 (and its dependent claims 10 and 14) be examined in the present application in conjunction with claims 1-6 and 13.

In the August 22, 2008 Office Action, the Examiner again rejected claims 1-3, 5-6 and 13 under 35 USC §102(b) as allegedly anticipated by Steck (EP 0586461 B1) and

claim 4 under 35 USC §103(a) as unpatentable over Steck in combination with secondary reference Spencer (WO 00/10216).

Applicants disagree with the Examiner's position. Steck does not disclose the subject invention as set forth in amended claim 1 above -- that is, a catalyst-coated membrane wherein, *inter alia*,

- an active area is formed by coating a portion of the ionomer membrane surface with a catalyst layer; or
- a protective film overlaps said active area; or
- a layer sequence of membrane-catalyst layer-protective film is form in a region of each active area.

Steck discloses a different type of MEA technology based on the use of gas diffusion electrodes (or catalyst-coated GDLs) in combination with non-coated ionomer membranes. In contrast, the present invention is directed towards catalyst-coated membranes (CCMs) in which the membrane is coated with catalyst layers on both sides. This CCM is optionally combined with GDLs to form a five-layer MEA.

Because of this difference between the present invention and Steck, the resulting structures are different. In Steck, the protective film (or "gasketing material") is "interposed" between the catalyst layer and the membrane (see claim 1 and Figures 1 and

2 in Steck) -- whereas in the present invention the catalyst layer is in direct contact with the membrane and the protective film is applied on top of this combination.

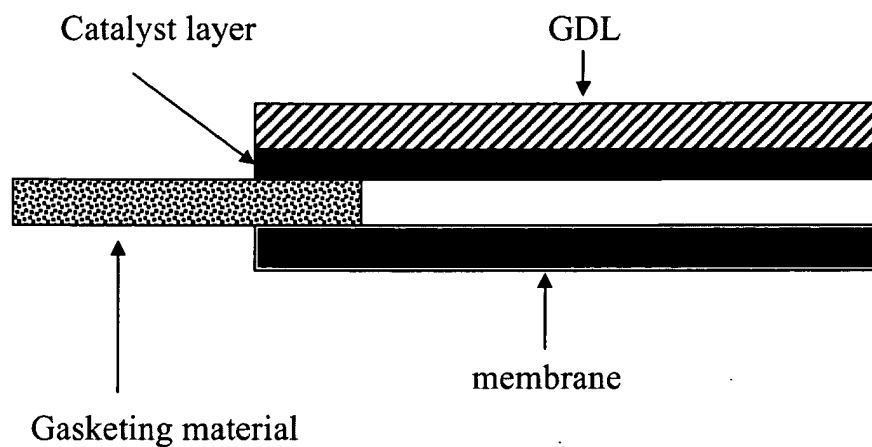
As far as the claim limitations, Steck fails to meet several limitations now present in claim 1. First of all, Steck does not disclose an ionomer membrane having a surface comprising an "active area", as defined in the present application. The active area as used in the present application is formed by coating a portion of the ionomer membrane with a catalyst layer. Steck coats the GDLs with catalyst, not the ionomer membrane.

Additionally, Steck does not attach a protective film in such a manner that it overlaps the active area. In Steck the active area is formed where the anode catalyst, the cathode catalyst and the membrane are in contact with each other (see the definition of active region in Steck, page 2, lines 17-20 and lines 26-27 and lines 54-55). In Figures 1 and 2 of Steck, the protective film 12, 14 is placed between the membrane and the electrode layers, thus isolating a portion of the catalyst layers from the membrane and making the active area smaller. Therefore, the protective film does not overlap the active area but is merely adjacent to it.

Furthermore, in Steck the following layer sequence results in the overlapping area:

catalyst layer – gasketing material (protective film) – membrane

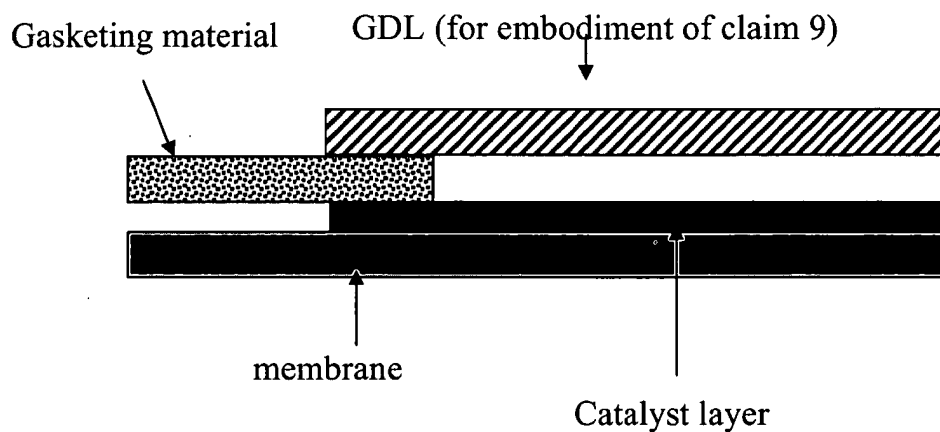
(see drawing 1 below):



In contrast, the present invention, as set forth in claim 1, requires that the protective film be applied in such a way so that the layer sequence in the overlapping area is:

gasketing material (i.e. protective film) – catalyst layer – membrane

(see drawing 2 below)



Because the layer sequence of the presently claimed invention is different than that of Steck, the CCM structures of the present invention are different than the structures disclosed in Steck. Thus, claim 1 is novel over, and not anticipated by, the disclosure of Steck. Claims 2-6 and 13, which dependent from claim 1, are patentable over Steck for the same reasons as outlined above for claim 1.

The MEAs of the present invention, as set forth in amended claim 9, are made from the CCMs discussed above (as made explicit by the dependency of claim 9 from independent claim 1). Accordingly, claim 9 and its dependent claims 10 and 14 are also patentable over Steck for the same reasons outlined above for claim 1.

Due to the different construction discussed above, the CCMs (claims 1-6) and MEAs (claims 9-10) disclosed in the present application possess superior characteristics compared to the state of the art materials, such as those disclosed in Steck. Surprisingly, it was found that a more stable MEA was obtained if the present invention was observed - i.e., starting from the CCM (catalyst-coated membrane), applying the protective film as described, and then applying the GDL.

The present invention results in an MEA having sufficient overlap of the protective film and the passive and active areas of the membrane. This kind of combined overlap is advantageous for the following reasons:

- The claimed CCM withstands frequent assembly and disassembly processes without damages (see Example 1, final sentence), and
- The MEA made thereof showed no damage after 300 hours of operation (see Example 2).

Neither Steck nor the secondary reference Spencer discloses the features of the present invention. Thus, the claimed CCMs and MEAs are believed to be patentable.

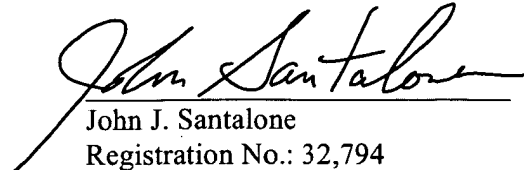
In light of the amendments and remarks above, Applicants request reconsideration and withdrawal of the rejections under 35 U.S.C. §§102(b) and 103(a) set forth in the August 22, 2008 Office Action and respectfully solicit allowance of the present application.

No fee is deemed due for this amendment, other than the fee for the requested three-month extension of time and the fee for the accompanying RCE, which Applicants are concurrently filing with the present response. If any additional fees are due, or an overpayment has been made, please charge, or credit, our Deposit Account No. 11-0171 for such sum.

Applicant: Zuber, et al.
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If the Examiner has any questions regarding the present application, the Examiner is cordially invited to contact Applicants' attorney at the telephone number provided below.

Respectfully submitted,


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